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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/042,132	01/11/2002	Kurt Alan Rubin	ARC919990196US1	5831

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EXAMINER
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FIGUEROA, NATALIA

ART UNIT	PAPER NUMBER
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2651

DATE MAILED: 10/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/042,132

Applicant(s)

RUBIN ET AL.

Examiner

Natalia Figueroa

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2651

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 August 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6, 8-17, 19, 21-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8, 9, 11-17, 19, 21-24, 26 and 27 is/are rejected.
- 7) ☒ Claim(s) 10 and 25 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2, 5, 14-17, 23-24 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Behr (USPN 5,055,951).

Regarding claim 1, Behr discloses an information recording system, comprising a storage medium having a plurality of adjacent tracks, each of the adjacent tracks including a plurality of storage elements that are arranged substantially along each respective track in substantially a regular manner (col. 5, lines 39-43), each track having an associated along-track direction (figs. 1 and 3), the storage elements being arranged substantially along first and second axes, the first axis being substantially perpendicular to the second axis, the first and second axes being each locally substantially 45° from the respective along-track directions of the tracks (or chevron pattern abstract, figs. 1 and 3, col. 10, line 64-col. 11, line 5); and a head disposed in proximity to the storage medium and having a width that substantially spans at least two adjacent tracks (figs. 1 and 3, col. 7, lines 36-41).

Regarding claim 2, Behr further discloses that the storage medium is a magnetic medium, and the head is a magnetic head (col. 5, lines 4-22 and 39-43).

Regarding claim 5, Behr further discloses that at least a portion of the magnetic storage medium is patterned (or chevron pattern fig. 1, col. 5, lines 51-53).

Regarding claim 14, Behr further discloses that the magnetic storage medium is a magnetic disk (col. 5, lines 4-10).

Regarding claim 15, Behr further discloses that the magnetic storage medium is a magnetic tape (col. 5, lines 4-10).

Regarding claim 16, Behr further discloses that the magnetic storage medium is magnetic strip (or magnetic transducer col. 5, lines 39-43).

Regarding claim 17, Behr further discloses that the information recording system is part of a magnetic medium disk drive (col. 5, lines 18-22).

Regarding claim 23, Behr further discloses that the head reads information from at least two adjacent tracks spanned by the head (figs. 1 and 3, col. 8, lines 3-23).

Regarding claim 24, Behr further discloses that the head writes information to at least two adjacent tracks spanned by the head (figs. 1 and 3, col. 7, lines 36-41).

Regarding claim 26, Behr further discloses that the plurality of adjacent tracks is formed by a plurality of concentric tracks (col. 5, lines 39-43).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3-4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Behr in view of Rubin et al (USPN 6,421,195).

Regarding claim 3, Behr fails to teach that each track is located substantially in a plane within the storage medium, and wherein at least one storage element is a magnetic domain storage element that is substantially perpendicular to the plane in which the track in which the storage element is arranged is substantially located.

However, Rubin et al disclose such on (col. 7, lines 21-25). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus as disclosed by Behr with the above teachings of Rubin et al the motivation being selecting a magnetization orientation that provides the most data capacity in the data storage system, hence the increase of density.

Regarding claim 4, Behr fails to teach that each track is located substantially in a plane within the storage medium, and wherein at least one storage element is a magnetic domain storage element that is substantially parallel to the plane in which the track in which the storage element is substantially located. However, Rubin et al disclose such on (col. 7, lines 19-20).

Regarding claim 6, Behr fails to teach that the magnetic storage medium is a perpendicular magnetic storage medium. However, Rubin et al disclose such on (col. 4, lines 40-42).

5. Claims 11-12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Behr in view of Hamann et al (USPN 6,233,206).

Regarding claims 11, 12 and 13: Sidman and Rubin et al fail to teach that the magnetic storage medium has an areal density of at least about 64 Gbit/in<sup>2</sup>, 128 Gbit/in<sup>2</sup>, and 256 Gbit/in<sup>2</sup>.

However, Hamann et al disclose such on (fig. 7 and disclosure thereof, col. 8, lines 36-43). Therefore, it would have been obvious to one having ordinary skill in the art at the time the

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invention was made to modify the apparatus as disclosed by Behr with the above teachings from Hamann et al to include a magnetic structure with the necessary areal density hence providing a correct head to bit match.

6. Claim 8-9, 19, 21-22 and 27 rejected under 35 U.S.C. 103(a) as being unpatentable over Behr in view of Mallary (USPN 6,430,123).

Regarding claims 8 and 9, Behr is relied upon for the same reasons of rejection as stated above. Behr fails to explicitly teach that the along-track direction of the track is a circle and a spiral. However, Mallary discloses such on (or various shaped patterns figs. 2 and 4 and col. 3, lines 28-32). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus as disclosed by Behr with the above teachings from Mallary to have patterns as needed hence reducing the amount of unused space on the medium.

Regarding claim 19, Behr is relied upon for the same reasons of rejection as stated above. Behr fails to explicitly teach that at least a portion of the optical storage medium is patterned. However, Mallary discloses such on (figs. 2 and 4, col. 3, lines 28-32).

Regarding claim 21-22, Behr is relied upon for the same reasons of rejection as stated above. Claims 21-22 have limitations similar to those treated in the above rejections of claims 8-9, and are met by the references as discussed above.

Regarding claim 27, Behr is relied upon for the same reasons of rejection as stated above. Claim 27 has limitations similar to those treated in the above rejection(s), and is met by the

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references as discussed above. Claim 27 however also recites the following limitation "an optical storage medium".

However, Mallory discloses such on (abstract and col. 1, lines 8-16). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus as disclosed by Behr with the above teachings from Mallory to have the means for an optical medium hence providing a system that can be matched to the users specifications.

#### ***Allowable Subject Matter***

7. Claims 10 and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Response to Arguments***

8. Applicant's arguments with respect to claims 1 and 27 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following documents are cited to further show the state of the art with respect to patterned media.

a) Hardwick (USPN 4,074,328): Discloses recording and reproducing patterned media.

b) Cooper, Jr. (USPN 6,665,118): Discloses control signal recording for patterned media.

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Natalia Figueroa whose telephone number is (703) 305-1260.

The examiner can normally be reached on Monday - Thursday 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh N. Tran can be reached on (703) 305-4040. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

NFM



**SINH TRAN  
PRIMARY EXAMINER**